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EXAMINER	
ZETTL, MARY E	

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2875	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,234	YONEDA ET AL.	
	Examiner	Art Unit	
	MARY ZETTL	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/10/2007*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7-14 and 16-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-14 and 16-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 February 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the two identical optical fiber bands mounted with their front and back sides turned upside down in the holding body and the respective adjacent binding parts configured to alternate in deviation to enable adjacent optical fibers to spread into linear arrays that are turned upside down from each other to provide a stacked configuration must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 9 and 13 are objected to because of the following informalities:

Regarding claim 9, in line 2 the phrase "is rotatably about" is grammatically incorrect. It is suggested that the phrase be changed to –is rotatable about-.

Regarding claim 13 in line 17 the phrase "each length of all or a part of the optical fibers are different" is vague and confusing as it is not understood how a part of a length can be different.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-4, 7-14, and 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regard to claim 1, it is unclear what is meant by the two identical optical fiber bands are mounted with their front and backsides turned upside down in the holding body. Generally optical fiber bands are not oriented with front and backsides. The

applicant has not made clear what constitutes the front and back sides of the optical fiber bands.

In regard to claim 13, it is unclear what is meant by the binding parts are configured to alternate in deviation to enable adjacent optical fibers to spread into linear arrays that are turned upside down from each other to provided a stacked configuration. The applicant has not made clear in the drawings or in the specification what constitutes as right side up and upside down of the optical fibers since generally such terms are not applied to optical fibers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 10, 11, 13, 16, 18, and 19, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Conzola et al. (US 5,185,638 A) in view of Windross (US 5,222,794).

Regarding claim 1, Conzola et al. teaches a line light irradiation device comprising: multiple light emitting parts each of which is provided with an optical fiber band and a columnar lens (30 and 31) wherein the optical fiber band comprises a light irradiating part formed by arranging light leading out end portions of multiple optical fibers (25) in a straight line (shape of outer surface of 20; Figure 9) or in multiple straight

lines and a binding part (outer surface of 20) formed by binding light introducing end portions of the optical fibers and the columnar lens is arranged to extend along a direction of the straight line in front of the light irradiating part in pairs (see Figure 12), and that irradiate line light that converges into the straight line; and a holding body (col. 8, lines 32-36) that is arranged to face an object on which the straight line light is to be irradiated, on which a monitoring bore (hollow part of item 20, that accommodates the fiber optics) is arranged to penetrate in order to monitor the object, the holding body holding the light emitting parts (col. 8, lines 31-36) so that each optical axis face of the line light irradiated from each of the light emitting parts crosses on a predetermined straight line. Conzola et al. further teaches two identical fiber optic bands (one item 20 on the left side in Figure 9 and one in the identical item on the right side) being mounted with their front and back sides turned upside down (orientation of item 20 arbitrarily taken to be upside down) in the holding body so that the location of each adjacent binding part (20; Figure 9) is different (item 20 on left side in a different location than item 20 on the right side; Figure 9).

Conzola et al. teaches predetermined lengths of the multiple optical fiber bands (25) being made to be different (Figure 10). Conzola et al. does not teach the binding part being located to deviate to either one of two directions with respect to the center line of the light irradiating part.

Windross teaches a fiber optic illuminating device including a columnar lens (20), wherein predetermined lengths of the multiple optical fibers (14) of the optical fiber band (Figure 1) are made to be different so that the binding part (12; fiber optic cable serves

to bind individual fiber optics together) is located to deviate to either one of two directions with respect to a center line of the light irradiating part (around 18).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Conzola et al. such that the binding part was of the type that is located to deviate from either one of two directions with respect to the center line of the light irradiating part as taught by Windross such that the location of the binding part was no longer restricted to the center position and is located in a position that saves space and allows easy access to the light source.

Regarding claim 2, Conzola et al. teach each light emitting part being arranged on a holding body so that the optical axis of the light irradiated from each light emitting part is arranged radially viewed from the above-mentioned direction of the line (Figure 9).

Regarding claim 3, Conzola et al. teaches the columnar lens (one of the plurality of columnar lens; col. 8, line 55) being arranged generally on a straight line viewed from the above-mentioned direction of the line (see Figure 12).

Regarding claim 4, Conzola et al. teaches a pair of pinching plates (i.e. opposite faces of item 20, Figure 10, making up pairs of plates), the pinching plates hold the light leading out end portions of the multiple fibers by pinching them between the pair of pinching plates.

Regarding claim 10, Conzola et al. teaches the multiple light emitting parts (col. 4, lines 58-68) being arranged serially along the above mentioned direction of the straight line (Figure 9).

Regarding claim 11, Conzola et al. teach each length of the light emitting part being identical (Figure 9).

Regarding claim 13, Conzola et al. teach a line light irradiation device comprising: a light source (col. 8, line 27); multiple light emitting parts, each of which is provided with a light irradiating part where multiple optical fibers (25) with light introducing end portions are bundled and aligned with the light source, and arranged in a line with light leading out end portions of the respective multiple optical fibers for forming a straight line of a predetermined width (Figures 10 and 12), a plurality of columnar lens (27; Figure 10), each arranged to extend along a direction of a respective line in front of each of the light irradiating parts, and to converge light onto a straight line (Figure 8); a holding body (col. 8, lines 32-36) that is arranged to align with an object on which line light is to be irradiated, including a monitoring bore (hollow portion of 20 that accommodates fiber optics, 25) arranged to enable a monitoring of the object (by allowing a passage for the light traveling means), the holding body holding the light emitting parts (col. 8, lines 31-36) so that each optical axis of light irradiated from each of the light emitting parts crosses at a predetermined straight line, and binding parts (20) that are formed by binding each of the respective light introducing end portions of the optical fibers wherein the lengths of the optical fibers are different (Figure 10). Conzola et al. further teaches the respective adjacent binding parts (outer surface of 20) being

configured to alternate in deviation (leaned in different directions; Figure 9) to enable adjacent optical fibers to spread into linear arrays that are turned upside down from each other to provide a stacked compact configuration (see Figure 10; wherein optical fibers, 25 are considered to be stacked on top of each other and arbitrarily oriented upside down from each other).

Conzola et al. does not teach the optical fibers being bound in a substantially cylindrical form. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have bound the fiber optics in a substantially cylindrical form, since it has been held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination. Further, one would have been motivated to select the shape of a cylinder for the purpose of being mateable with other cylindrical parts. See *In re Dailey*, 357 F. 2d 669, 149 USPQ 47 (CCPA 1966).

Conzola et al. does not teach the binding part being located to deviate to either one of two directions with respect to the center line of the light irradiating part.

Windross teaches a fiber optic illuminating device including a columnar lens (20), wherein predetermined lengths of the multiple optical fibers (14) of the optical fiber band (Figure 1) are made to be different so that the binding part (12; fiber optic cable serves to bind individual fiber optics together) is located to deviate to either one of two directions with respect to a center line of the light irradiating part (around 18).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Conzola et al. such that the

binding part was of the type that is located to deviate from either one of two directions with respect to the center line of the light irradiating part as taught by Windross such that the location of the binding part was no longer restricted to the center position and is located in a position that saves space and allows easy access to the light source.

Regarding claim 16, Conzola et al. teach a cylindrical rod lens (Figure 11; col. 8, line 55) aligned with each of the light emitting ends of the optical fibers of each of the multiple light emitting parts to form the line of light on the predetermined surface.

Regarding claim 18, Conzola et al. teaches one light source for each multiple light emitting part (fiber optic line converter; col. 4, lines 58-68), at least two multiple light emitting parts are connected to opposite ends of the holding body (opposite taken to mean left and right) and the light leading out end portions being positioned to extend parallel to the respective ends of the holding body.

Conzola et al. does not teach the shape of the holding body. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the body into a rectangular shape, since it has been held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination. Further, one would have been motivated to select the shape of a rectangle for the purpose of creating a standard and simple shape that is easy to manufacture. See *In re Dailey*, 357 F. 2d 669, 149 USPQ 47 (CCPA 1966).

Regarding claim 19, Conzola et al. teaches the holding body (mechanical body) including a bracket member (spring loaded pivoting bracket; col. 8, lines 34-36)

mounting at least one of the binding parts, the bracket member being pivotably mounted in the holding body to enable a rotational movement of the mounted binding part to move the line of light of the mounted binding part from a position exterior of the rectangular body (i.e. light output exterior to the holding body will be moved; col. 8, lines 31-49).

5. Claims 7, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conzola et al. (US 5,185,638 A) and Windross (US 5,222,794) as applied to claims 1 and 13 above and further in view of Biard (US 5,148,303 A).

Regarding claims 7, 14, and 17, Conzola et al. and Windross do not disclose expressly an LED light source. Biard et al. teach a fiber optic device utilizing LEDs (Abstract; Table 1). At the time the invention was made it would have been obvious to one of ordinary skill in the art to have modified the invention of Conzola et al. and Windross such that LEDs as taught by Biard were utilized since it is well known that LEDs consume less power, are longer lasting, and are more rugged than other light sources. Biard et al. further teaches using a power LEDs with current flow greater than or equal to 200mA (col. 5, Table 1). At the time the invention was made, it would have been further obvious to one of ordinary skill in the art to have utilized a power LED in the invention of Conzola et al. and Windross such as that taught by Biard et al. in order to enhance the desired light output characteristics.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conzola et al. (US 5,185,638 A) and Windross (US 5,222,794) as applied to claim 1 above and further in view of Marcus et al. (US 5,596,409 A).

Regarding claim 8, Conzola et al. and Windross do not disclose expressly the irradiation device having the capability of varying the distance between the light irradiating part and the columnar lens being adjustable. Marcus et al. teach a device for measuring physical properties of an object, the device including a lens and optical fibers; wherein the distance between the lens and the optical fibers is variable (col. 19, lines 14-27). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Conzola et al. and Windross such that the distance between the optical fibers and the lens is variable in order to increase the range of object feature sizes and the size of the surface area that is analyzed.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conzola et al. (US 5,185,638 A) and Windross (US 5,222,794) as applied to claim 1 above and further in view of Wack et al. (US 6,782,337 B2).

Regarding claim 9, Conzola et al. appears to illustrate (Figure 9) means for rotating the device, however neither Conzola et al. nor Windross discuss such rotational means expressly. Wack et al. teach a device for monitoring defects including a light source that rotates around a rotational axis (col. 37, lines 40-45) and the rotational angle is at a fixed position. At the time the invention was made, it would have been

obvious to one of ordinary skill in the art to have modified the invention of Conzola et al. and Windross such that the light source was rotatable as taught by Wack et al. as a means for detecting more defects by providing more viewing angles.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conzola et al. (US 5,185,638 A) and Windross (US 5,222,794) as applied to claim 1 above and further in view of Poffenbarger (US 5,953,113 A).

Regarding claim 12, Conzola et al. and Windross not disclose expressly a light source being arranged for each of the light irradiating parts individually. Poffenbarger teaches a device for detecting defects including fiber optics with individual LEDs (col. 3, lines 54-56). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Conzola et al. and Windross such that individual light sources were provided as taught by Poffenbarger in order to increase the brightness of output illumination.

Response to Arguments

9. The following is in response to the arguments filed on December 10th, 2007.

On page 10, the applicant has argued that Conzola et al. teaches a mechanical housing without any detailed disclosure. The examiner maintains that Conzola et al. teaches a holding body (mechanical housing; col. 8, lines 32-36) as presently claimed.

The examiner further points to line 31 stating that the fiber optic lines are arranged in the mechanical housing and therefore Conzola et al. teaches the holding body (mechanical housing) holding the light emitting parts (along fiber optic lines).

Also on page 10, the applicant has argued that Conzola et al. does not teach a cylindrical rod lens. The examiner maintains that in teaching a plurality of cylindrical rod lenses (col. 8, lines 55) Conzola et al. meets the limitation of teaching a cylindrical rod lens.

On pages 11-12, the applicant has argued that Miller (US 5,268,977) teaches a light with a different intended purpose. However, despite the intended purpose the examiner maintains that Miller teaches the bracket around the light source and the monitoring bore, lacked by Conzola et al. and that given that both references teach illumination through the use of fiber optics one of ordinary skill in the art would have been motivated to have combined the structural features of Miller into the invention of Conzola et al. for the purposes of providing a sturdy structure and for providing a means for light to be illuminated upon the work surface.

On page 12, the applicant has argued that the "arrangement [of Windross] would be consistent with a relatively inexpensive headlight source for a vehicle, but certainly not for the environment of inspecting minute features on a printed circuit board." Windross was not relied upon to teach inspection of minute features on a printed circuit board, but rather to teach an illumination device of various lengths and a binding part (12; fiber optic cable serves to bind individual fiber optics together) that is located at a position that deviates from a center line of a light irradiating part. The examiner

maintains that one of ordinary skill in the art would have been motivated to have modified the invention of Conzola et al. by varying the lengths of the fiber optics for the purpose of conserving space (Windross shows that only one binding part is necessary for a plurality of fiber optics and therefore space and materials are conserved by reducing the number of required bonding parts).

On page 13, the applicant has argued that Windross does not teach the binding part. The examiner maintains that item 12, the fiber optic cable, serves to bind the fiber optics together and is therefore considered a binding part.

Also on page 13, the applicant has argued that the Biard reference is not in the same field as the present invention. The examiner points out that it is not necessary for the combined prior art to be in the same field so long as there is some motivation to combine their teachings. One of ordinary skill in the art would certainly have been motivated to have modified the invention of Conzola et al. by utilizing LEDs as taught by Biard since the benefits of LEDs, low power consumption, long lifespan, ruggedness, are highly well known.

On pages 13-14 the applicant has questioned the motivation for combing the teachings of Conzola et al. and Marcus et al. The examiner maintains that one of ordinary skill in the art would have been motivated to have combined the teachings of the two references due to the fact that both are directed toward inspecting the physical properties of an object.

On page 14 in regard to the Poffenbarger reference and the Applicant's argument that the Examiner's conclusion of obviousness is based upon improper

hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper. *In re McLaughlin*, 443 F.2d 1392; 170 USPQ 209 (CCPA 1971).

10. Applicant's arguments with respect to claims 1-4, 7-14, and 16-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARY ZETTL whose telephone number is (571)272-6007. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandy O'Shea can be reached on 571-272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MZ

/Sharon E. Payne/
Primary Examiner, Art Unit 2875